ABSTRACT

In society, electrical energy is one source that is very important and needed in everyday life. With the development of the times, the need for electrical energy by consumers is increasing. The problem that is often faced by most people is the waste of electrical energy due to the unscheduled use of electronic devices. When people use electronic devices, they often neglect to turn off electronic devices, resulting in a waste of electrical energy.

To improve the efficiency of electrical energy use, a management system and web-based control system for daily electronic devices are created that can determine the electricity bill target every 30 days according to the user's wishes.

In this system, the building class is used as a benchmark for calculating the price per kWh of electricity. The priority of electronic devices can be determined by the user and then forwarded to the optimization algorithm using the genetic algorithm method for system efficiency and a database to store user data. The optimal fitness value will be obtained in the generation that corresponds to the mutation rate. The greater the mutation rate, the greater the generation obtained because there are more random values as shown in the mutation rate test table. With a mutation rate of 0.2, the best fitness value is 1,499,945,328 in the 37th generation. From the results of execution time testing, which shows an average execution time of 2.556 second, as well as system testing with a 100% accuracy rate obtained from alpha testing, this indicates that the designed system is running perfectly.

Keywords *: Restrictions on the use of electrical energy, Genetic Algorithm, website, database*